## Variability of $PM_{2.5}$ concentrations in the Charleston Neck - Amendment1

**No changes are being made to sections:**

**A3 Distribution List**

**A4 Project Organization:**

**A5 Background:**

**A7 Quality Objectives and Criteria**

**D2 Validation and Verification Methods**

**A6 Project Description:**

The primary objective of the sampling is to determine the spatial variability of the $PM_{2.5}$ concentrations in the residential areas of the Charleston Neck and collect sufficient samples to provide representative measurements of $PM_{2.5}$ in the Charleston Neck communities during the project period. The data will permit an evaluation of potential differences in concentration within and between populated communities and the correlation of local concentrations with concentrations at the existing monitoring sites.

This Amendment to the plan addresses changes in sampling design required to accommodate the difficulties encountered in securing sites that have prevented the planned concurrent sampling across the project area. The changes in sampling design will also accommodate measurement and comparison of Neck area $PM_{2.5}$ concentrations using a Federal Reference Method (FRM) sampler, verification of saturation sampler performance within the project area and provide data that will assist in clearer communication of project results and population exposure.

| Activity | Organization | Expected Initiation | Expected Completion |
|---|---|---|---|
| | | | |
| QAPP Approval | DAQA | July, 2008 | July, 2008 |
| Sampler acquisition | DAQA/ EPA | | |
| *Sampler evaluation | DAQA | April, 2008 | July 15, 2008 |
| Site identification, acquisition, and installation | DAQA | March 12, 2008 | July 15, 2008 |
| | | | |
| Sampling | Region 7/DAQA | July 15, 2008 | November, 15, 2008 |
| FRM sampling | Region 7/DAQA | October 21, 2008 | December,2008 |
| Report | DAQA | - | January, 2009 |
| * Related activity that may impact project Schedule | | | |

**B1-B7 Sampling and Analysis Design and Requirements:**

Three of the planned four sampling locations have been secured in cooperation with the communities. The samplers in the communities of Accabee, Union Heights, and Chicora-Cherokee began sampling (as indicated in the table) as soon as the sites were secured. A Rosemont community site has not been established, but efforts to do some sampling in the community will continue. The ideal sample population, intended to be approximately 20 sample sets containing all sites, will likely not be possible, but sufficient data should be available for reasonable comparison between sites to meet the project primary objective.

| **Site** | **Start Date** | **Valid Samples** (through 10/10/08) |
|---|---|---|
| Accabee | 8/19/08 | 15 |
| Union Heights | 8/22/08 | 14 |
| Chicora-Cherokee | 9/18/08 | 5 |
| Rosemont | - | - |
| Howard Heights | - | - |

The saturation samplers being used for the study have been demonstrated to indicate concentrations approximately 3 $\mu g/M^3$ higher than the FRM. Concentrations measured to this point in the project indicate the bias, primarily due to lower flow rate across the media, is reflected in the preliminary saturation sampler concentrations as compared to area FRM concentrations. Underlying community concerns about the representativeness of the existing Charleston $PM_{2.5}$ monitoring network (CPW and FAA) and the potential for misinterpretation of the biased saturation sampler concentrations can be addressed by the addition to the project described in this Amendment.

The City of North Charleston has provided a location in the project area suitable for installation of a R&P 2025 FRM sampler. The addition of collocated FRM and saturation method sampling at a Howard Heights site strengthens the project by:

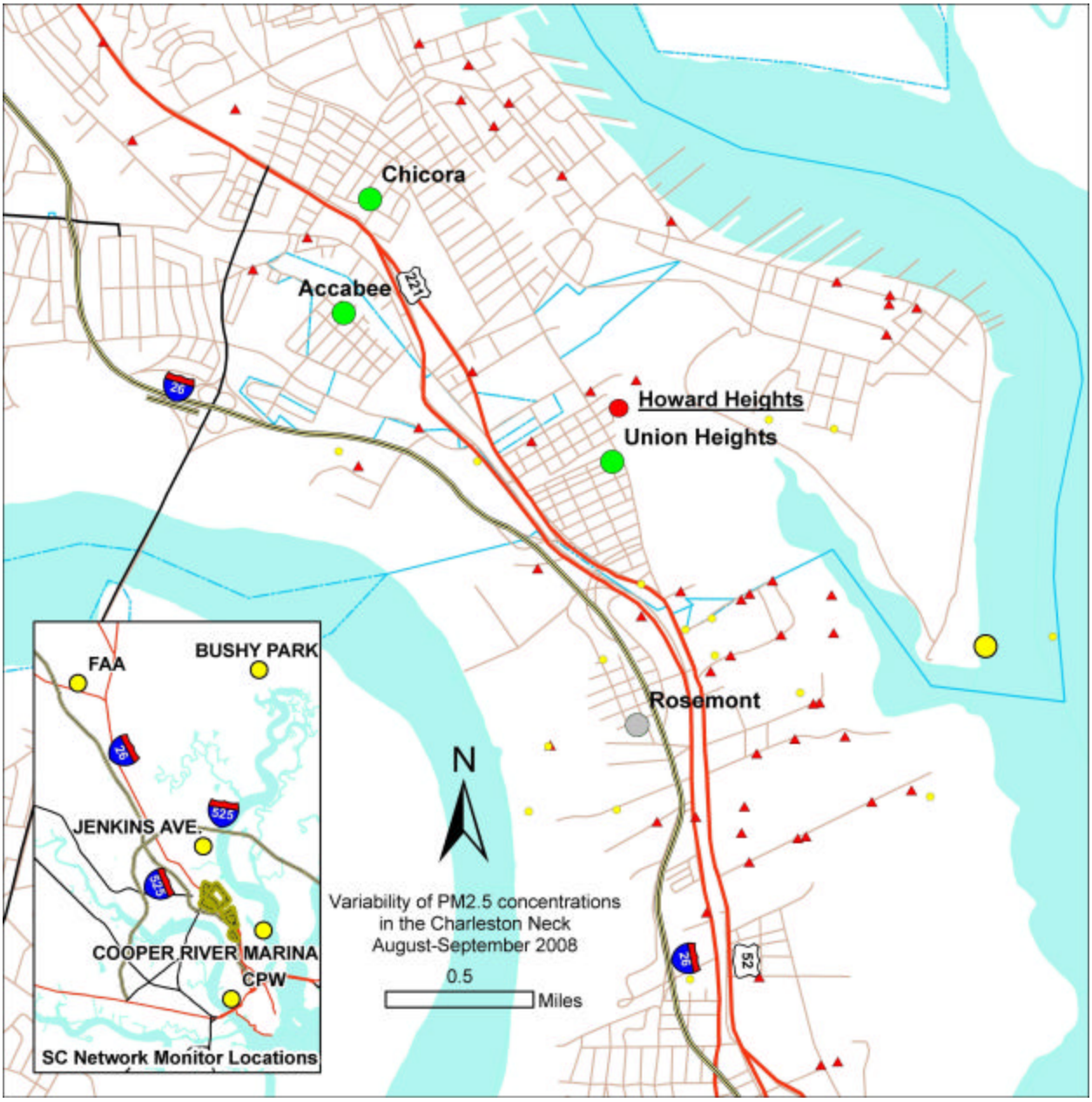
- providing an in-project indicator of saturation sampler bias in the particulate composition present in the Charleston Neck.
- providing FRM data in the project area to unambiguously measure relative concentrations in the area represented by the existing ambient monitoring network
- providing higher spatial resolution data near an area of consistently higher concentrations measured to this point of the project.

The additional collocated sampling in the Howard Heights community will be operated on the project specified 1:3 day national schedule, midnight to midnight (EST) and will supplement the project area saturation sampling. FRM sampling will initiated on the 1:3 schedule but sampling frequency (for the FRM only) may be increased if significant differences are observed between the Howard Heights concentrations and the area average represented by the average of the network FRM concentrations.

Sampling will begin as soon as the equipment is installed and continue for no more than two months (20 samples @1:3 schedule).

## Project Area

The project area includes the communities of Rosemont, Silver Hill, Four Mile, Five Mile, Union Heights, Howard Heights, Chicora-Cherokee, Accabee and Windsor. This amendment adds the indicated site at Howard Heights



**Union Heights**

**Howard Heights**